



COLORADO
Division of Water Resources
Department of Natural Resources

March 21, 2023

Lauren Tiedemann Loob, P.E.
BBA Water Consultants, Inc.
333 West Hampden Ave, Ste 1050
Englewood, CO 80110

Re: Greeley 35th Avenue Pit Substitute Water Supply Plan (WDID 0302546, Plan ID 2945)
Formerly known as Greeley 35th Ave/Iverson Combined Augmentation Plan
Greeley 35th Avenue Pit, DRMS Permit No. M-1977-036 (WDID 0303022)
Sections 34 & 35, T6N, R66W, 6th P.M.
Water Division 1, Water District 3, Weld County

Approval Period: April 1, 2023 through March 31, 2024
Contact information for Ms. Loob: 303-806-8952; ltiedemann@bbawater.com

Dear Ms. Loob:

We have reviewed your letter dated February 7, 2023 requesting approval of a substitute water supply plan ("SWSP") on behalf of Martin Marietta ("Applicant" or "MM") in accordance with section 37-90-137(11), C.R.S., to cover depletions caused by an existing gravel pit operation known as the Greeley 35th Avenue Pit (DRMS Permit No. M-1977-036). The required renewal fee of \$257 has been received (receipt no. 10027094). The Greeley 35th Avenue Pit site was previously included in a combined SWSP with the Iverson Pit; however, since April 2018 the Greeley 35th Avenue Pit has operated under an individual SWSP.

SWSP Operations

The Greeley 35th Avenue Pit is located along the Cache la Poudre River in Sections 34 and 35, Township 6 North, Range 66 West of the 6th P.M., as shown on the attached Figure 1. During this plan period, MM will continue mining operations at the Greeley 35th Avenue Pit. The depletions that are projected to result from the mining operations over the period of this SWSP include evaporation from exposed groundwater, water removed with the mined product, and water used for dust suppression. The proposed replacement sources are a combination of reusable effluent leased from the City of Greeley, water stored in MM's Heaton Reservoir, water stored in MM's 35th Avenue Reservoir, and/or excess historical consumptive use credit attributable to 12 Whitney Irrigating Ditch Company shares owned by MM.

Depletions

Depletions at the Greeley 35th Avenue Pit during this plan period will consist of evaporation from exposed groundwater surface area, water lost in mined product, and dust suppression.



Pursuant to section 37-90-137(11)(b), C.R.S. and case no. 2009CW49, a gravel pit operator or property owner does not need to replace depletions that occur due to evaporation from groundwater exposed prior to January 1, 1981 (“pre-81”) as a result of open mining of sand and gravel, regardless of whether mining continued after December 31, 1980. The total exposed groundwater area at the site is 80.12 acres, of which 49.22 acres are a part of a total of 52 acres of groundwater recognized by this office as having been exposed within the Greeley 35th Avenue Pit reclamation permit boundary prior to January 1, 1981. Therefore, replacement of evaporative depletions is only required for the 30.90 acres exposed after December 31, 1980. The location of the 49.22 acres exposed prior to January 1, 1981 is shown on the attached Figure 1. The credits for the pre-81 area are tied to the location identified on the map and may not be re-allocated to other areas of groundwater exposure within the gravel pit permit boundary. Any pre-81 area that is backfilled will lose its pre-81 exemption should it be excavated in the future. Additionally, the backfilling of a pre-81 area does not create a credit for use elsewhere.

Net evaporative depletions were calculated using a gross annual evaporation of 3.65 feet (43.8 inches) from the exposed water surface, with a credit of 0.84 feet (10.08 inches) for effective precipitation, based on average annual precipitation of 1.20 feet (14.42 inches) for the Greeley UNC weather station (1967-2010). The value of 14.42 inches of average annual precipitation is less than the average annual precipitation for the most recent ten years of record (2012-2022) and therefore is acceptable for the purposes of this SWSP. **For any future SWSP renewal, the period the average annual precipitation is based on should be extended through the most recent year available (2023 for the 2024-2025 renewal).** Based on the above, net evaporative depletions at the Greeley 35th Avenue Pit are projected to total 86.92 acre-feet for the period of April 1, 2023 through March 31, 2024.

The Applicant projects mining a total of 30,000 tons of aggregate from the Greeley 35th Avenue Pit during this plan period. The Applicant expects that all of the material will be washed on site, therefore the water retained in the mined product is considered to be 4.0% of the washed material by weight, which results in a projected groundwater loss of 0.88 acre-feet.

The Applicant projects using a total of 20.18 acre-feet of water from the Greeley 35th Avenue Pit for dust suppression during this plan period.

MM also owns and operates a concrete batching plant on site. Water for concrete batching purposes is pumped from an existing alluvial well, permit no. 47856-F (WDID 0307597), located within the DRMS permit boundary. The Applicant does not anticipate operating the concrete batching plant during this plan period.

The total consumptive use of groundwater at the Greeley 35th Avenue Pit (including evaporative and operational losses) is estimated to be 107.98 acre-feet for this plan period.

Depletions were lagged to the Cache la Poudre River using the IDS Alluvial AWAS analytical stream depletion model, with the following parameters: specific yield (SY) = 0.2, distance from the centroid of the 35th Avenue Pit site to the river (X) = 1,500 feet, aquifer width (W) = 5,000 feet, and transmissivity (T) = 120,000 gallons per day per foot. The total lagged depletions for the Greeley 35th Avenue Pit were determined to be 107.54 acre-feet for this plan period. This amount includes lagged depletions resulting from past consumptive use at the site that are projected to impact the river during this plan period. The attached Table 1 shows the monthly breakdown of evaporative, operational, and lagged depletions for the Greeley 35th Avenue Pit.

Dewatering

Dewatering at the Greeley 35th Avenue Pit is expected to continue for the duration of this plan period. As long as the site is continuously dewatered at approximately the same rate, the water returned to the stream system should be adequate to offset the depletions attributable to dewatering operations. Totalizing flow meters must be installed at each discharge location and meter readings must be reported on the submitted accounting. The meter readings will be used in calculating the post-pumping depletions that must be replaced if dewatering rates are reduced or if dewatering ceases altogether at the site.

Replacements

The operator proposes to provide replacement for this pit using fully consumable water leased from the City of Greeley, water stored in MM's 35th Avenue Reservoir, and/or excess consumptive use credits from 12 shares of the Whitney Irrigating Ditch Company.

City of Greeley Lease

The primary source of replacement water will be from a permanent lease of 125 acre-feet of fully consumable effluent water from the City of Greeley ("Greeley"). MM's predecessor, Lafarge West, Inc., traded its 550 Boyd and Freeman Ditch shares for 125 acre-feet of augmentation water from Greeley. MM acquired this lease from Lafarge as part of their acquisition of the Greeley 35th Avenue Pit. The lease allows MM to use this water to cover depletions at Greeley 35th Avenue Pit and surrounding land. A copy of the lease with Greeley was previously submitted to this office and is attached to this letter. Fully consumable replacement water provided by Greeley will be returned to the river at one of the following locations:

- a) Greeley Water Pollution Control Facility Outfall (WDID 0302312) located on the Cache La Poudre River;
- b) JBS Swift Industrial WWTP Outfall (WDID 0102342) on Lone Tree Creek;
- c) confluence of the 35th Avenue Drainage Ditch and Cache La Poudre River;
- d) any augmentation station/release structure(s) to be constructed in the vicinity of such confluence and associated with Greeley's operation of reservoirs known as Flatiron Reservoir Nos. 1-5 (a.k.a. Poudre Ponds/Greeley West Pit/Greeley 25th Ave Pit);
- e) an augmentation station/release structure located under the Boyd and Freeman Ditch and approved by the water commissioner and division engineer for such purpose;
- f) release structures from Greeley Canal No. 3 as described in Greeley's decree in case no. 99CW232, or;
- g) any other release and measurement point that Greeley and MM agree upon.

A total of 125 acre-feet of water available under the lease is anticipated to be used for replacement purposes under this SWSP. The Applicant is required to coordinate with the water commissioner the delivery location of replacement water to ensure out-of-priority depletions are adequately replaced to prevent injury to other water rights. Conveyance loss for delivery of augmentation water is subject to assessment and modification as determined by the water commissioner or division engineer.

35th Avenue Reservoir

The Applicant may also use for replacement purposes water stored in MM's 35th Avenue Reservoir (WDID 0303844) under free river conditions in 2018, 2019, 2020, 2021, and 2022 with the approval of the water commissioner. The 35th Avenue Reservoir is the lined portion of the Greeley 35th Avenue Pit, generally located in the western portion of the site. Replacement water will be pumped from the reservoir directly to the Cache la Poudre River at a point approximately 1183 feet from the North section line and 1052 feet from the East section line of Section 34, Township 6 North, Range 66 West of the 6th P.M. (Easting 520509.7, Northing 4477607.6) as shown on the attached Figure 1. All water stored in and released from the 35th Avenue Reservoir must be measured and accounted for in a manner approved by the Water Commissioner. As shown in Column 8 of Table 2, a total of 1.26 acre-feet of water is anticipated to be pumped from the 35th Avenue Reservoir for replacement purposes during the months of September and October 2023.

Whitney Irrigating Ditch Company Shares

MM owns 12 shares in the Whitney Irrigating Ditch Company ("Whitney Ditch", WDID 0300930) that can be delivered directly to the river for immediate credit or delivered to a recharge pond (Parsons Mine Recharge Area, WDID 0302067) for lagged recharge accretion credits. The 12 Whitney Ditch shares are primarily used as a replacement source in MM's Parsons Mine SWSP (WDID 0302583, Plan ID 5822). When the historical consumptive use credit from the 12 Whitney Ditch shares exceeds what is needed to replace depletions at the Parsons Mine, MM has requested the ability to utilize the excess credit for replacement of depletions at the Greeley 35th Avenue Pit.

As more fully described in the Parsons Mine SWSP, MM's 12 shares in the Whitney Ditch were quantified and changed for a variety of uses including augmentation/replacement in case no. 2008CW65, which relied on a ditch-wide analysis of the 320 total shares in the Whitney Ditch. The total average annual consumptive use for MM's 12 Whitney Ditch shares was determined to equal 164.25 acre-feet per year and 337.88 acre-feet of total deliveries. A total of 260.55 acre-feet of Whitney Ditch water was projected to be diverted for use under the June 1, 2022-May 31, 2023 Parsons Mine SWSP, resulting in a total of 115.75 acre-feet of consumptive use credit from direct delivery and recharge. Of this amount, 75.30 acre-feet are expected to be required for replacement of depletions under the Parsons Mine SWSP, leaving an estimated 40.45 acre-feet available for use in other plans. Operations for the 2023-2024 plan year are anticipated to be similar. The return flow obligations associated with the use of the Whitney Ditch shares will be calculated and replaced under the Parsons Mine SWSP. The excess credit attributable to the Whitney Ditch shares available for use in this SWSP, after accounting for return flow obligations, will be shown in the Parsons Mine SWSP accounting and will match the amount claimed in the accounting for this SWSP. Prior to the use of this source for replacement purposes under this SWSP, MM will obtain an agreement with the Greeley Irrigation Company ("GIC") allowing MM to bypass the excess Whitney Ditch credits past the Greeley No. 3 ditch headgate in the event the Greeley No. 3 Ditch is drying up the Cache la Poudre River using the GIC's bypass structure. A transit loss (currently 0.5% per mile) will be assessed for a distance of 7.5 miles between the point of delivery of the Whitney Ditch water and the location of the Greeley 35th Avenue Pit. The GIC requires an additional 15% transit loss to be assessed to any water delivered through the GIC bypass structure. As shown in the attached Table 2, water from this source is not anticipated to be needed for replacement purposes during this plan period.

A monthly breakdown of projected depletions and replacements from each source is shown in the attached Table 2.

Long Term Augmentation

In accordance with the letter dated April 30, 2010 from the Colorado Division of Reclamation, Mining, and Safety ("DRMS"), all sand and gravel mining operators must comply with the requirements of the Colorado Reclamation Act and the Mineral Rules and Regulations for the protection of water resources. The April 30, 2010 letter from the DRMS requires that you provide information to DRMS to demonstrate you can replace long term injurious stream depletions that result from mining related exposure of groundwater.

MM amended the reclamation plan for the Greeley 35th Avenue Pit to change the final land use of approximately 130 acres of the western portion of the site, known as the West Pit or West Cell, to Developed Water Resources. On December 1, 2015, the slurry wall liner for this portion of the site was approved by the State Engineer's Office as meeting the performance standard for liners, and the West Cell is now classified as a lined reservoir in accordance with the 1999 SEO Guidelines (Greeley 35th Ave Reservoir, WDID 0303844). MM has obtained a bond for \$7,764,000 through the DRMS which includes the cost of installing a slurry wall around the remaining (Non-West Cell) portion of the site to prevent long term exposure of groundwater at the Greeley 35th Avenue Pit.

Conditions of Approval

I hereby approve the proposed SWSP in accordance with section 37-90-137(11), C.R.S. subject to the following conditions:

1. This SWSP shall be valid for the period of April 1, 2023 through March 31, 2024, unless otherwise revoked or superseded by decree. If a court decreed plan for augmentation is not obtained for the proposed uses by the SWSP expiration date, a renewal request must be submitted to this office with the statutory fee (currently \$257 per gravel pit) prior to the expiration date and no later than February 1, 2024. If a renewal request is received after the expiration date of this plan, it may be considered a request for a new SWSP, in which case a \$1,593 filing fee will apply.
2. The Applicant must replace all out-of-priority depletions resulting from operation under this SWSP, including those lagged depletions that occur to the stream after the expiration date of this SWSP.
3. Well permit no. 81343-F has been obtained for the current use and exposed pond surface area of the Greeley 35th Avenue Pit in accordance with sections 37-90-137(2) and (11), C.R.S.
4. The total surface area of the groundwater exposed at the Greeley 35th Avenue Pit after December 31, 1980 must not exceed 30.9 acres, which results in an annual net evaporative loss of 86.92 acre-feet.
5. The annual amount of water used from the Greeley 35th Avenue Pit for operational purposes during this plan period shall not exceed 21.06 acre-feet (estimated as 20.18 acre-feet for dust suppression and 0.88 acre-feet lost with 30,000 tons of mined aggregate). The Applicant shall not pump water from well permit no. 47856-F for concrete batching operations during this plan period.
6. Total consumption at the Greeley 35th Avenue Pit site during this plan period must not exceed these aforementioned amounts unless an amendment is made to this SWSP.

7. All diversions shall be measured in a manner acceptable to the division engineer. The Applicant shall install and maintain such measuring devices as required by the division engineer for operation of this SWSP.
8. Approval of this SWSP is for the purposes as stated herein. This office must first approve any additional uses for the water.
9. All releases of replacement water must be sufficient to cover all out-of-priority depletions in time, place, and amount and must be made under the direction and/or the approval of the water commissioner.
10. **Prior to the use of any Greeley effluent water, the Applicant is required to notify the water commissioner and obtain the water commissioner's approval at least 48 hours prior to use, or less if allowed by the water commissioner.** The Applicant is required to obtain the water commissioner's approval on a daily basis or other interval as required by the water commissioner. These replacement supplies may only be used at times when there is a continuous live stream between a downstream replacement location and the point of depletion and there is no call for water within that reach.
11. The release of replacement water may be aggregated to maximize beneficial use. The water commissioner and/or the division engineer shall determine the rate and timing of an aggregated release.
12. The replacement water which is the subject of this SWSP cannot be sold or leased to any other entity, unless prior written approval is granted by the water commissioner and/or the division engineer. As a condition of subsequent renewals of this SWSP, the replacement water must be appurtenant to this site until a plan for augmentation is obtained.
13. The Applicant shall provide daily accounting (including, but not limited to diversions, depletions, replacement sources, and river calls) on a monthly basis. The accounting must be uploaded to the CDSS Online Reporting Tool within 30 days of the end of the month for which the accounting applies (<https://dwr.state.co.us/Tools/reporting>). Instructions for using the tool are available on the Division of Water Resources website on the "Services" → "Data & Information" page under the heading of Online Data Submittal. Accounting and reporting procedures are subject to approval and modification by the division engineer. Accounting forms need to identify the WDID number for each structure operating under this SWSP. Additional information regarding accounting requirements can be found in the attached Augmentation Plan Accounting Protocol. **NOTE:** Monthly accounting, even during the winter non-irrigation season, is required.

The Applicant shall verify that the entity making replacements (City of Greeley) has included the Applicant on their accounting and submitted their accounting to the division office and the water commissioner.
14. Conveyance loss for delivery of augmentation water is subject to assessment and modification as determined by the division engineer.
15. Applicant shall follow the attached Augmentation Plan Accounting Protocol for the operation of this SWSP.
16. In order to prevent injury to other water rights, the division engineer and water commissioner must be able to administer the Applicant's replacement water past headgates on the river at times when those headgates would otherwise be legally entitled to divert all available flow in

or “sweep” the Cache la Poudre River or its tributaries. The Applicant shall not receive credit for replacement of depletions to the Cache la Poudre River below such diversion structures unless bypass and measurement structures are in place to allow the division engineer and water commissioner to confirm that the Applicant’s replacement water is delivered past the headgates. In the event that delivery past dry-up points requires the use of a structure for which a carriage or use agreement with a third party is required, the Applicant shall be responsible for securing such agreement. Until such time as the Applicant provides a copy of the carriage or use agreement to the division engineer and water commissioner, no credit will be allowed for replacement of depletions to the Cache la Poudre River below such diversion structure.

17. The Division of Water Resources will not be responsible for any enforcement or administration of third party agreements that are not included in a decree of the water court.
18. Dewatering at the Greeley 35th Avenue Pit site will produce delayed depletions to the stream system. As long as the site is continuously dewatered, the water returned to the stream system should be adequate to offset the depletions, thus dewatering is required to continue during the term of this plan. Once dewatering at the sites cease, the delayed depletions must be addressed, including depletions resulting from the gradual refilling of the pit. At least three years prior to completion of dewatering, a plan must be submitted that specifies how the post pumping dewatering depletions will be replaced, in time, place and amount.
19. If dewatering of the Greeley 35th Avenue Pit site is discontinued, the pit would fill, creating additional depletions to the stream system due to increased evaporation. To assure that additional depletions to the river do not occur, a bond for \$7,764,000 through the DRMS for lining or backfilling of the exposed groundwater has been obtained. Therefore, if the dewatering is discontinued the bond can finance the completion of the lining of the Greeley 35th Avenue Pit or the backfilling, thus preventing depletions to the stream system.
20. The approval of this SWSP does not relieve the Applicant and/or landowner of the requirement to obtain a Water Court decree approving a permanent plan for augmentation or mitigation to ensure the permanent replacement of all depletions, including long-term evaporation losses and lagged depletions after gravel mining operations have ceased. If reclamation of the mine site will produce a permanent water surface exposing groundwater to evaporation, an application for a plan for augmentation must be filed with the Division 1 Water Court at least three (3) years prior to the completion of mining to include, but not be limited to, long-term evaporation losses and lagged depletions. If a lined pond results after reclamation, replacement of lagged depletions shall continue until there is no longer an effect on stream flow.
21. The state engineer may revoke this SWSP or add additional restrictions to its operation if at any time the state engineer determines that injury to other vested water rights has occurred or will occur as a result of the operation of this SWSP. Should this SWSP expire without renewal or be revoked prior to adjudication of a permanent plan for augmentation, all excavation of product from below the water table, and all other use of water at the pit, must cease immediately.
22. In accordance with amendments to section 25-8-202(7), C.R.S. and “Senate Bill 89-181 Rules and Regulations” adopted on February 4, 1992, the state engineer shall determine whether the substitute supply is of a quality to meet requirements of use to which the senior

appropriation receiving the substitute supply has normally been put. As such, water quality data or analyses may be requested at any time to determine if the requirement of use of the senior appropriator is met.

23. The decision of the state engineer shall have no precedential or evidentiary force, shall not create any presumptions, shift the burden of proof, or serve as a defense in any water court case or any other legal action that may be initiated concerning the SWSP. This decision shall not bind the state engineer to act in a similar manner in any other applications involving other SWSPs or in any proposed renewal of this SWSP, and shall not imply concurrence with any findings of fact or conclusions of law contained herein, or with the engineering methodologies used by the Applicant.

If you have any questions concerning this approval, please contact Javier Vargas-Johnson in Denver at (303) 866-3581 ext. 8227 or Michael Hein in Greeley at (970) 352-8712.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jeff Deatherage".

for Jeff Deatherage, P.E.,
Chief of Water Supply

Attachments: Figure 1
Tables 1-2
City of Greeley Lease
Letter from DRMS dated April 30, 2010
Augmentation Plan Accounting Protocol

Cc: Michael Hein, Lead Assistant Division Engineer, Michael.Hein@state.co.us
1809 56th Avenue, Greeley, CO 80634, (970) 352-8712

Mark Simpson, Water Commissioner, District 3, Mark.Simpson@state.co.us

Louis Flink, Tabulation/Diversion Records Coordinator, Louis.Flink@state.co.us

Dawn Ewing, Accounting Coordinator, Dawn.Ewing@state.co.us

Peter Hays, Division of Reclamation Mining and Safety, Peter.Hays@state.co.us



Legend

- 35th Ave Reservoir Completed Liner
- Property Boundary (Approx.)
- Pre-81 Area
- Exposed Surface Area

Aerial Photo Date: 7/17/2019 Google Earth
Data Source: CDSS, CDOT, USGS, BLM

Figure 1
Martin Marietta
35th Avenue Pit



1 inch = 750 feet



Overview Map



Table 1
Martin Marietta
Greeley 35th Avenue Pit - WDID #0303022
Total Depletions

	Evaporative Depletions						Production Depletions								
	(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)	(12)	(13)	
Month	Exposed Area (ac)	Gross Evaporation (ft)	Avg. Total Precipitation (ft)	Effective Precipitation (ft)	Net Evaporation (ft)	Net Evaporation Volume (ac-ft)	Aggregate Production (tons)		Aggregate Production Consumption (ac-ft)	Dust Suppression/ Reclamation (ac-ft)	Concrete Production Consumption (ac-ft)	Total Production Depletions (ac-ft)	Total Depletions (ac-ft)	Total Lagged Depletions (ac-ft)	
							Crushed (Not Washed)	Washed							
Apr-23	30.90	0.33	0.15	0.11	0.22	6.87	0	0	0.00	1.53	0.00	1.53	8.40	6.47	
May-23	30.90	0.44	0.20	0.14	0.30	9.15	0	0	0.00	2.15	0.00	2.15	11.30	8.15	
Jun-23	30.90	0.53	0.16	0.11	0.42	12.89	0	10,000	0.29	3.38	0.00	3.67	16.56	10.80	
Jul-23	30.90	0.55	0.13	0.09	0.46	14.14	0	10,000	0.29	3.38	0.00	3.67	17.81	13.07	
Aug-23	30.90	0.49	0.11	0.08	0.41	12.77	0	10,000	0.29	3.38	0.00	3.67	16.44	13.91	
Sep-23	30.90	0.37	0.09	0.06	0.30	9.31	0	0	0.00	1.84	0.00	1.84	11.16	12.73	
Oct-23	30.90	0.26	0.09	0.06	0.19	6.02	0	0	0.00	1.53	0.00	1.53	7.55	10.68	
Nov-23	30.90	0.15	0.06	0.04	0.10	3.16	0	0	0.00	1.07	0.00	1.07	4.23	8.51	
Dec-23	30.90	0.11	0.04	0.03	0.08	2.46	0	0	0.00	0.46	0.00	0.46	2.92	6.76	
Jan-24	30.90	0.11	0.04	0.03	0.08	2.54	0	0	0.00	0.46	0.00	0.46	3.00	5.75	
Feb-24	30.90	0.13	0.03	0.02	0.11	3.30	0	0	0.00	0.08	0.00	0.08	3.38	5.26	
Mar-24	30.90	0.20	0.09	0.06	0.14	4.29	0	0	0.00	0.92	0.00	0.92	5.21	5.45	
Total 2023-2024	-	3.65	1.20	0.84	2.81	86.92	0	30,000	0.88	20.18	0.00	21.06	107.98	107.54	

Notes:

(1) Equal to the maximum exposed post-1981 surface area of 35.3 acres.

(2) Total gross evaporation (3.65 feet) is based upon NOAA Technical Report NWS 33 and distributed according to SEO Senate Bill 89-120 criteria:

November:	4.0%	February:	3.5%	May:	12.0%	August:	13.5%
December:	3.0%	March:	5.5%	June:	14.5%	September:	10.0%
January:	3.0%	April:	9.0%	July:	15.0%	October:	7.0%

(3) Equal to the average precipitation at the Greeley UNC, CO (ID#3553) NOAA weather station for the time period 1967-2010.

(4) Equal to (3) x 70%.

(5) Equal to (2) - (4).

(6) Equal to (1) x (5).

(7) Aggregate production from mining is based upon information from Martin Marietta (MM).

(8) Water removed with crushed mined aggregate is equal to 4.8 gallons/ ton (2% of total mined volume) and water removed with washed mined aggregate is equals 9.6 gallons/ton (4% of total mined volume) as defined by Senate Bill 89-120. Therefore, (8) is equal to the projected crushed and washed aggregate production (in tons), multiplied by 4.8 gallons/ton or 9.6 gallons/ton respectively, divided by 325,851 to convert gallons to acre-feet.

(9) Dust suppression water from the 35th Avenue Site based upon information from MM.

(10) Concrete production at the 35th Avenue batch plant is based upon information from MM.

(11) Equal to (8) + (9) + (10).

(12) Equal to (6) + (11).

(13) Depletions are lagged using the Glover methodology in the IDS AWAS model using the following parameters:

Transmissivity: 120,000 gallons/day/foot

Specific Yield: 0.2

Aquifer Width: 5,000 feet

Distance from center of pits to river: 1,500 feet

Table 2
Martin Marietta
Greeley 35th Avenue Pit - WDID #0303022
Total Lagged Depletions and Replacements

	Depletions			Replacements						
	(1)	(2)	(3)	(4)	Whitney Ditch			35th Ave Reservoir	(9)	(10)
					(5)	(6)	(7)	(8)		
	Total 35th Avenue Lagged Depletions	Percent of Month Free River (%)	Lagged Depletions Requiring Replacement (ac-ft)	Permanent Greeley Lease (ac-ft)	Excess Whitney Ditch Credits (ac-ft)	Transit Loss (ac-ft)	Replacement from Whitney Ditch Credits (ac-ft)	Water Pumped from 35th Ave Reservoir (ac-ft)	Total Replacements (ac-ft)	Net Effect to the River (ac-ft)
Apr-23	6.47	0%	6.47	8.88	0.00	0.00	0.00	0.00	8.88	2.41
May-23	8.15	0%	8.15	10.33	0.00	0.00	0.00	0.00	10.33	2.18
Jun-23	10.80	0%	10.80	12.75	0.00	0.00	0.00	0.00	12.75	1.95
Jul-23	13.07	0%	13.07	15.42	0.00	0.00	0.00	0.00	15.42	2.35
Aug-23	13.91	0%	13.91	16.70	0.00	0.00	0.00	0.00	16.70	2.79
Sep-23	12.73	0%	12.73	12.71	0.00	0.00	0.00	0.02	12.73	0.00
Oct-23	10.68	0%	10.68	9.44	0.00	0.00	0.00	1.24	10.68	0.00
Nov-23	8.51	0%	8.51	9.95	0.00	0.00	0.00	0.00	9.95	1.44
Dec-23	6.76	0%	6.76	8.18	0.00	0.00	0.00	0.00	8.18	1.42
Jan-24	5.75	0%	5.75	7.16	0.00	0.00	0.00	0.00	7.16	1.41
Feb-24	5.26	0%	5.26	6.65	0.00	0.00	0.00	0.00	6.65	1.39
Mar-24	5.45	0%	5.45	6.83	0.00	0.00	0.00	0.00	6.83	1.38
Total 2023-2024	107.54	-	107.54	125.00	0.00	0.00	0.00	1.26	126.26	18.72

Notes:

(1) From Column 13 of Table 1.

(2) Equal to the percent of the month under Free River conditions. No free river was projected for purposes of this SWSP request.

(3) Equals (1) - ((1)*(2))

(4) Deliveries from the City of Greeley under the permanent lease are equal to 125 ac-ft annually and are requested annually based upon MM's anticipated monthly schedule for the April through March lease schedule. According to the lease, the schedule of delivery is variable so long as the delivery in any given month does not exceed 125% of the delivery schedule presented in Exhibit B of the lease and the total amount in any lease year does not exceed 125 ac-ft.

(5) Excess Whitney Ditch HCU credits delivered to the Cache La Poudre River at MM's Parsons Mine for replacement of depletions at the 35th Avenue Pit.

(6) Total transit loss associated with deliveries from (5). Based upon 0.5% transit loss per mile and a total distance to the point of depletion of 7.5 miles. Whitney Ditch credit deliveries will also be assessed a 15% transit loss at times when the GIC bypass structure is used to deliver the credits past the Greeley No. 3 headgate. Therefore, for purposes of this projection a transit loss of 18.75% has been assumed.

(7) Equal to (5) - (6).

(8) Total replacement water pumped to the Cache La Poudre River from storage in MM's 35th Ave Reservoir.

(9) Equal to (4) + (7) + (8).

(10) Equal to (3) + (9).

WATER AGREEMENT

THIS WATER AGREEMENT, dated this 23rd day of January, 2008, is entered into by and between the City of Greeley, acting by and through its Water and Sewer Board ("City"), and Lafarge West, Inc., a Delaware corporation ("Lafarge").

RECITALS

- A. Lafarge owns approximately 370 acres located in Sections 34 and 35, Township 6 North, Range 66 West of the 6th P.M., Weld County, Colorado, as more specifically described in the attached Exhibit A (the "35th Avenue Pit Site").
- B. Lafarge conducts sand and gravel mining and related activities on the 35th Avenue Pit Site and on other sites located in the South Platte River basin. Lafarge requires augmentation and replacement water to replace water depletions that occur to the South Platte River and its tributaries as a result of such activities.
- C. Lafarge and the City are both shareholders in the Boyd Irrigation Company, a mutual ditch company that owns water rights decreed to divert water from the Cache la Poudre River into the Boyd and Freeman Ditch, and both parties own land historically irrigated by such water rights.
- D. Lafarge's mining operations have created, and may in the future create, opportunities for lined gravel pit reservoirs that could be useful to the City.
- E. Lafarge is willing to transfer its Boyd Irrigation Company shares to the City in exchange for a permanent lease of augmentation and replacement water from the City, and the City is amenable to such an arrangement, as more particularly described herein. Both parties also wish to study and discuss opportunities for construction of lined gravel pit reservoirs in the vicinity of the 35th Avenue Pit Site, as more particularly described herein.

WHEREFORE, in consideration of the mutual promises contained herein, the City and Lafarge hereby agree as follows:

AGREEMENT

1. Permanent Lease of Augmentation/Replacement Water. Greeley hereby leases to Lafarge 125 acre-feet (AF) of water temporarily or permanently approved for augmentation and replacement purposes ("Augmentation Water") per year under a permanent lease as shown in Exhibit B. Deliveries shall commence during the month in which this agreement becomes effective. Lafarge may request to vary monthly Augmentation Water deliveries for the next April 1 through March 31 period (Lease Year) up to an amount equal to 125 percent of the monthly deliveries shown in Exhibit A by notifying Greeley by January 1 of the preceding Lease Year, provided that no more than 125 AF of water shall be delivered during any Lease Year, and that a minimum of 77 AF of water shall be delivered during any April-October period. Greeley shall release and measure such water at Greeley's reasonable discretion at one of the following locations: a) Greeley Water Pollution Control Facility Outfall located on the Cache la Poudre River; b) JBS Swift industrial wastewater treatment plant outfall on Lone Tree Creek; c) confluence of 35th Avenue Drainage Ditch and Cache la Poudre River, or any augmentation station/release structure(s) to be constructed in the vicinity of such confluence and associated with Greeley's operation of reservoirs known as Flatiron Reservoir Nos. 1-5 (aka Poudre Ponds at Greeley or Greeley West Pit) or, as described below, with lined gravel pit reservoir storage to be constructed on the 35th Avenue Pit Site as Lafarge may expand such site onto adjacent property in the future; d) as described in more detail below, an augmentation station/release structure located under the Boyd and Freeman Ditch and approved by the Division of Water Resources for such purposes (the "Boyd and Freeman Augmentation Station"); e) release structures from Greeley Canal No. 3 as described in Greeley's decree in Case No. 99CW232; or f) any other release and measurement point approved by Lafarge in writing in its reasonable discretion. Unless otherwise agreed, Lafarge shall be responsible for any transmission losses charged by the Division of Water Resources following the release and measurement of such water, and for obtaining any necessary approvals of the use of such water for Lafarge's purposes. Each party shall be solely responsible for maintenance, repair and replacement of all structures owned by them respectively, including without limitation all costs and expenses thereof.

2. Use and Assignment. Augmentation Water leased under this Agreement may only be used for dust suppression, gravel washing, or other water uses associated with sand and gravel mining, or for evaporation loss replacement. This lease may be assigned in whole or in part by Lafarge upon Greeley's written consent, provided that a) Greeley will not unreasonably withhold consent to any assignment for water uses associated with sand and gravel mining; b) Greeley will not unreasonably withhold consent to an assignment solely for evaporation loss replacement following completion of mining reclamation upon the assignee's agreement to pay a one-time storage and pumping fee of \$3600 per AF, adjusted by the Denver area Consumer Price Index from the effective date hereof to the date of assignment; and c) Greeley may withhold consent to any assignment to another governmental entity in its sole discretion.

3. Transfer and Leaseback of Boyd and Freeman Ditch Water Rights. As full consideration and rent for the permanent lease of the Augmentation Water described in Section 1 (subject to an assignee's possible obligation to pay the storage and pumping fee upon assignment described in Section 2), Lafarge agrees to transfer, convey and assign by bargain and sale deed, stock assignment and irrevocable stock power to Greeley all of its right, title and interest in water rights decreed to the Boyd and Freeman Ditch and associated with its 550 shares of stock in the Boyd Irrigation Company (the "Boyd and Freeman Ditch Water Rights") within 15 days of the effective date of this Agreement. Lafarge shall also execute covenants prohibiting irrigation of its 35th Avenue Pit Site with any water available under shares of stock in the Boyd Irrigation Company except as may temporarily be required to allow Lafarge to meet its reclamation obligations under the mining permit for the 35th Avenue Pit Site. In partial satisfaction of Greeley's Augmentation Water lease obligation in Section 1 hereof, Greeley may elect to make Augmentation Water available to Lafarge under the Boyd and Freeman Ditch Water Rights for use in Lafarge's Substitute Water Supply Plan to replace evaporative water losses or other water depletions occurring at Lafarge's 35th Avenue Gravel Pit Site, or other sand and gravel mining sites located between the headgates of Greeley Canal No. 3 and the Ogilvy Ditch (the "Adjacent Sites") during the April-October period. Lafarge agrees to use best efforts to continue to obtain any necessary approvals related to the use of water available under the Boyd and Freeman Ditch Water Rights in any renewals of such Substitute Water Supply Plan; provided, however, that nothing herein shall affect Greeley's obligation to deliver Augmentation Water from other sources in the event that a Substitute Water Supply Plan using the Boyd and Freeman Ditch Water Rights is not approved by the State Engineer's Office. Unless otherwise required by law, absent Greeley's written approval, Lafarge agrees not to seek court adjudication of any plan for augmentation involving Augmentation Water to be released from Greeley during the April-October period until the later of a) ten full Lease Years after the effective date of this agreement, or b) completion of all required mine reclamation activities on the 35th Avenue Pit Site and the Adjacent Sites. Lafarge shall give Greeley prompt written notice of any such legal requirement for Lafarge to seek such court adjudication prior to the times specified above, and shall not file an application seeking such court adjudication for a minimum of 90 days following the sending of such notice unless such ninety (90) day period is waived by Greeley in its sole discretion. Upon receipt of such notice, Greeley and Lafarge shall confer with respect to what specific Greeley water supplies, consistent with Greeley's other obligations under this Agreement including without obligation its obligation to provide Augmentation Water, Greeley shall allow to be included as supplies from which Greeley will make water available to Lafarge in such application. If, prior to the time specified in subsections a) and b) of this Section, the State Engineer's Office denies a Substitute Water Supply Plan submitted by Lafarge that relies in whole or in part upon the Boyd and Freeman Ditch Water Rights, Greeley may request that Lafarge file and prosecute an administrative or judicial appeal of such denial; proceedings at the initial level of any such appeal shall be at Lafarge's expense, while proceedings at any further level of appeal, if any, shall be at Greeley's expense.

4. Boyd and Freeman Augmentation Station. Greeley agrees to use best efforts to design, obtain Division of Water Resources approval for, and construct the Boyd and Freeman Augmentation Station at its expense for use to deliver Augmentation Water commencing in April 2009. The Boyd and Freeman Augmentation Station shall be owned by Greeley, is preliminarily proposed to be located on Greeley property north of the Rover Run dog park, and shall be designed and constructed to deliver water at a flow rate equal to or greater than Lafarge's pro rata share of the total rate of flow currently decreed to the Boyd and Freeman Ditch and available under the Boyd and Freeman Ditch Water Rights. Lafarge agrees to cooperate with Greeley in obtaining approvals for the Boyd and Freeman Augmentation Station.

5. Negotiations for Gravel Pit Storage Facilities. The parties agree to pay one-half each of the costs of a study to be performed by Lyman-Henn or another mutually acceptable consultant to evaluate the feasibility and cost of constructing and operating lined water storage facilities and associated structures from gravel pits located or to be located on Lafarge's 35th Avenue Pit site, or on other nearby sites in which Lafarge has obtained or may in the future obtain a gravel mining lease, including without limitation Greeley's F Street Reservoir site. The precise scope of work of the study shall be agreed upon by the parties in advance. The parties estimate that such study will take approximately four months to complete. Following the completion of such study, the parties will discuss the study and a possible second transaction involving Greeley's acquisition of such facilities or the right to construct and operate them in exchange for Greeley's long-term lease of additional Augmentation Water to Lafarge or other consideration. Greeley shall have the exclusive right to negotiate with Lafarge concerning such acquisition for 12 months following the parties' receipt of such study.

6. Lafarge Junior Water Storage Rights. Lafarge agrees to use best efforts (as further limited herein) to obtain a decree in the application for junior conditional water storage rights for 35th Avenue Reservoir currently pending in Case No. 98CW476 Water Division No. 1, with decreed uses that include a) the replacement of evaporative losses from all sand and gravel mining sites currently owned by Lafarge, from other sand and gravel mining sites located or to be located between the headgates of Greeley Canal No. 3 and the Ogilvy Canal in which Lafarge may have or assume any responsibility for replacement of such losses, or from the F Street Reservoir, 8th Street Reservoir, and Flatiron/Greeley West Pit sites, and b) the replacement of return flow obligations decreed or to be decreed as conditions of the approval of any change of water right that makes such right legally available for the replacement of any such losses, including changed water rights originally decreed to Greeley Canal No. 3 and associated with shares of stock in the Greeley Irrigation Company. Greeley agrees not to oppose the entry of a decree in such application that contains these terms, and to discuss with Lafarge possible strategies to obtain such a decree. If Lafarge obtains such a decree and the parties successfully negotiate a subsequent transaction involving Greeley's acquisition of the right to water storage facilities described in the preceding paragraph, Lafarge and Greeley agrees to negotiate in good faith, as part of such transaction, Greeley's acquisition of a pro rata interest in the decreed junior conditional rights upon payment by Greeley of such

consideration as may be mutually agreed upon between the parties. This paragraph does not obligate Lafarge to expend, or obligate Greeley to reimburse, funds for the costs and attorney fees associated with holding a trial in such application.

7. Entire Agreement. This Agreement constitutes a complete understanding of the parties and merges and supersedes any and all other discussions, proposals, agreements, and undertakings, either oral or written, between the parties with respect to the subject matter hereof.

8. Amendment. This Agreement shall not be changed, modified, terminated, or amended except by a writing signed by each party to this Agreement.

9. Paragraph Headings. Paragraph headings contained in this Agreement are inserted for convenience of reference only, and shall not in any way define or affect the meaning, construction or scope of any of the provisions hereof.

10. Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties, their permitted successors and permitted assigns.

11. Default and Remedies. In the event of a default of any party's obligations hereunder, the party asserting a default shall give the other party written notice thereof and specify the default or defaults relied on. If the defaulting party fails to cure such default within 45 days after receipt of such notice, the non-breaching party shall have the right to specific performance or damages, or both.

12. Notices. Notices or other communications provided for herein or given in connection herewith shall be deemed given, made, delivered or served if made in writing and delivered personally or sent by registered or certified United States mail, return receipt requested and postage prepaid, to:

If to City:

City of Greeley Water and Sewer Department
Attn: Water Resource Manager
1100 10th Street
Greeley, Colorado 80631

If to Lafarge:

Lafarge West, Inc.
Director of Environment
10170 Church Ranch Way, Suite 200
Westminster, CO 80021

13. Approval by Greeley City Council. This Agreement shall not take effect unless and until it is approved by resolution of the Greeley City Council.

14. Survival. Any obligation in this Agreement which, by its terms, is intended to be performed after termination or transfer of the Boyd and Freeman Ditch Water Rights shall survive the same.

15. Other Necessary Acts. Each party shall execute and deliver to the other all such other further instruments and documents as may be reasonably necessary to carry out this Agreement and to provide and secure to the other party the full and complete enjoyment of its rights and privileges hereunder.

The parties have executed this Agreement effective as of the date first set out above.

LAFARGE WEST, INC.

Name: Mark Anderson

Mark Anderson

Title: Vice-President & General
Manager, Aggregate

STATE OF COLORADO

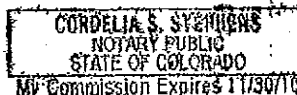
COUNTY OF Denver

} ss.

Subscribed under oath before me on 01/23/2009 by Mark Anderson as the Vice-President & General Manager, Aggregate, of Lafarge West, Inc., a Delaware corporation.

My commission expires: 11/30/2010

Cordelia S. Sydnors
Notary Public



CITY OF GREELEY, ACTING BY AND THROUGH ITS
WATER AND SEWER BOARD

ATTESTED AND
APPROVED AS TO SUBSTANCE:

By: [Signature]
City Manager and
Secretary to Board

APPROVED:

By: [Signature]
Chair, Water and Sewer Board

APPROVED AS TO LEGAL FORM:

By: [Signature]
City Attorney

APPROVED AS TO LEGAL FORM:

By: [Signature]
Counsel to Board

APPROVED AS TO AVAILABILITY OF FUNDS:

By: [Signature]
Director of Finance

APPROVED BY GREELEY CITY COUNCIL:

CITY OF GREELEY, A COLORADO MUNICIPAL CORPORATION



EXHIBIT A

35th Avenue Reservoir will be located on a tract of land in Sections 34 & 35, Township 6 North, Range 66 West of the 6th P.M., Weld County, Colorado, being more particularly described as follows:

Commencing at the northeast corner (NE Cor.) of northeast quarter (NE $\frac{1}{4}$) of said Section 35 and considering the east line of said northeast quarter (NE $\frac{1}{4}$) to bear S 00° 00' 00" with all bearings herein relative thereto:

Thence S 00° 00' 00" E, 513.13 feet to the southeast corner (SE Cor.) of a parcel of land described in Book 847, Reception #1769344 of Weld County records;

Thence along a south line of said parcel, N 69° 24' 50" W, 53.41 feet to a point on the west right-of-way line of Weld County Road 35 as recorded in Book 852 Reception #1773926 also being the true point of beginning;

Thence along said west right-of-way line, S 00° 00' 00" W, 2387.68 feet;

Thence N 87° 57' 44" E, 20.02 feet to a point on the west right-of-way of Weld County Road 35;

Thence along said west right-of-way, S 00° 00' 04" W, 804.64 feet to a point on the north right-of-way line of the Colorado and Southern Railway;

Thence along said north right-of-way line, N 73° 53' 43" W, 7019.20 feet to a point on the west line of the southeast quarter of the northeast quarter (SE $\frac{1}{4}$ NE $\frac{1}{4}$) of said Section 34;

Thence along said west line of the southeast quarter of the northeast quarter (SE $\frac{1}{4}$ NE $\frac{1}{4}$) of Section 34, N 00° 22' 53" W 293.28 feet to the northwest corner of said southeast quarter of the northeast quarter (SE $\frac{1}{4}$ NE $\frac{1}{4}$) of said Section 34;

Thence N 89° 41' 53" E, 1323.38 feet to the northeast corner of said southeast quarter of the northeast quarter (SE $\frac{1}{4}$ NE $\frac{1}{4}$) of Section 34;

Thence along the west line of the northwest quarter (NW $\frac{1}{4}$) of said Section 35, N 00° 20' 14" W, 1113.20 feet to a point on the south line of a parcel of land described in Book 891, Reception #1813358 of the Weld County records;

Thence along the boundary of said parcel by the following nine (9) courses:

1- S 86° 15' 20" E, 156.61 feet

2- S 70° 50' 33" E, 76.10 feet

3- S 60° 53' 33" E, 159.61 feet

4- S 60° 53' 33" E, 35.17 feet

- 5- S 69° 59' 33" E, 87.55 feet
- 6- N 69° 02' 07" E, 368.11 feet
- 7- N 88° 47' 27" E, 39.57 feet
- 8- N 74° 33' 27" E, 169.68 feet
- 9- N 02° 14' 57" E, 232.07 feet to a point on the north line of said Section 35;

Thence along said north line of Section 35, N 89° 25' 27" E, 2458.79 feet to the northwest corner (NW Cor.) of a parcel of land described in Book 847, Reception #1769344 of the Weld County records;

Thence along the boundary of said parcel by the following three (3) courses;

- 1- S 73° 37' 07" E, 431.59 feet
- 2- S 86° 27' 15" E, 672.24 feet
- 3- S 69° 24' 50" E, 885.39 feet to the true point of beginning; and

That portion of the northeast quarter (NE¼) of the northeast quarter (NE¼) of Section 34 located south and east of the center line of the Cache La Poudre River, all in Township 6 North, Range 66 West of the 6th P.M.

EXHIBIT B
AUGMENTATION/REPLACEMENT WATER DELIVERIES
TO LAFARGE WEST, INC.

Month	Delivery Amount (ac-ft)
November	9.59
December	9.59
January	9.59
February	9.59
March	9.59
April	7.66
May	9.99
June	13.22
July	14.67
August	13.80
September	10.17
October	7.55
Total	125.01

DIVISION OF RECLAMATION, MINING AND SAFETY

Department of Natural Resources

1313 Sherman St., Room 215

Denver, Colorado 80203

Phone: (303) 866-3567

FAX: (303) 832-8106

Bill Ritter, Jr.
GovernorJames B. Martin
Executive DirectorLoretta E. Piñeda
Director

April 30, 2010

Lafarge West, Inc.
10170 Church Ranch Way, Ste. 200
Westminister, CO 800210000

RE: Mining Operations with Exposed Ground water

To Whom It May Concern:

The Division of Reclamation Mining and Safety is responsible for ensuring that Sand and Gravel mining operators comply with the requirements of the Colorado Land Reclamation Act for the Extraction of Construction Materials (Act) and the Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials (Rules). Among these requirements are provisions for the protection of water resources. The Act requires that reclamation plans must ensure minimization of disturbances to the prevailing hydrologic balance, including disturbances to the quantity of water in the area affected by mining and in the surrounding areas. § 34-32.5-116(4)(h). Rule 3.1.6(1)(a) requires compliance with Colorado water laws and regulations governing injury to existing water rights both during and after mining. Permits must specify how the permittee will comply with applicable Colorado water laws and regulations governing injury to existing water right rights. Rule 6.3.3(j); Rule 6.4.5(2)(c). After an extensive review, the Division determined that several operators may not have appropriate permit conditions to address certain reclamation liabilities arising from impacts to water resources.

In September 2009 the Division of Water Resources (DWR) updated its Guidelines for Sand and Gravel Pits. These guidelines provide guidance on achieving compliance with state law regarding replacement of depletions from sand and gravel mining, thus the guidelines provide a benchmark for the protection of hydrologic balance required under the Act and Rules. As noted in the Guidelines, sand and gravel operations which expose groundwater without complying with state law create a reclamation liability by impacting available groundwater.

State law requires that any person exposing ground water must obtain a well permit from the SEO pursuant to § 37-90-137(11). Because exposed groundwater results in out-of-priority water depletions, operations which expose ground water must also eventually obtain a water-court approved augmentation plan. Currently, several operators do not have either an augmentation plan or bonding to provide an alternative method to mitigate injurious stream depletions that result from mining-related exposure of ground water. The Division has a statutory duty to ensure that lands affected by mining are reclaimed in a manner that complies with state law and to ensure that operators have sufficient bonding to achieve reclamation. In order to assist operators in achieving compliance with these requirements, the Division proposes that, by April 30, 2011, operators should contact the Division and agree upon a plan for achieving compliance.

The Division has identified four approaches for operators:

1. File a financial warranty that will ensure backfilling of the pit to cover the exposed ground water to a depth of two feet above the static ground water level or,
2. Obtain a court approved augmentation plan prior to exposing ground water or,
3. File a financial warranty to cover the cost of installing a clay liner or slurry wall that meets the Division of Water Resources requirements for preventing ground water exposure or,
4. Obtain approval from the Division of Water Resources that acknowledges compliance with the SEO's requirements pursuant to § 37-90-137(11).

The Division will work with operators on an individual basis as they move to implement one of these plans. It is likely that options 1 and 3 will require the submittal of a technical revision or an amendment to the existing permit depending on the nature of the current mining and reclamation plan and the proposed changes. Increased financial warranties, as a result of these modifications, may be posted in a phased manner not to exceed three years. Amendments or revisions currently under review will be required to be approved by April 30, 2011 and may use the phased financial warranty approach described above. New applications going forward or presently under review by the Division will be required to meet the requirements of one of the options 1-4 at the time of application approval. Failure of affected operators to initiate contact with the Division and gain compliance as described above could result in an enforcement action being issued by the Division.

If you have any questions, please contact Tony Waldron at 303-866-3567, extension 8150.

cc:	M2006064	Shields at Fossil Creek Mine	M1983031	Stromquist Pit
	M1994002	Andrews S & G #5 (Burlington Pit)	M1974072	Chantala Pit
	M2006018	North Bank Resources	M1985218	Rich Pit
	M2006073	Sundance Sand and Gravel Resource	M1985206	Boone-Martin Pit
	M2009082	Parsons Mine	M1995022	Andrews #2
	M1977081	Greeley West Pit	M1990144	Boone-Fillmore Pit
	M2003091	Duckworth Pit	M1997087	Hartman Pit
	M2000113	Mamm Creek Sand & Gravel	M2001094	Shaw Pit
	M2001090	River Valley Resource	M2002009	Beeman Pit #1
	M2000016	Riverbend Operation	M1981307	Fountain Pit
	M1979134	Powers Pit	M1977439	Home Office Mine
	M1977036	Greeley 35th Ave Pit	M1979191	Three Bells Pit
	M2000034	Reichert Pit	M1982182	Port of Entry Pit
	M2001051	North Taft Hill Expansion Site	M2002081	Overland Ponds
	M1974015	Lyons Pit	M1981088	McCoy Pit
	M1974004	Specification Aggregates Quarry	M1982034	Miller Pit
	M1987176	Hamm Pit	M1996082	Blair Mesa Pit
	M1988042	Cottonwood Pit	M1980136	Chambers Pit
	M1990112	State Pit	M1977098	Sievers Pit
	M1979002	North Delta Pit	M1983013	Latham - Burkett Pit
	M1979159	Brose Pit	M1979097	East Rigden Pit
	M1998014	Gypsum Ranch Pit	M1991035	Bluestone Pit
	M1999088	Kyger Pit	M1986159	Courtner Pit
	M1998075	Andrews #3 (Mock Pit)	M1974070	Nelson Pit
			M2000002	Tanabe Pit
			M1994045	Bluestone Pit
			M1986079	M & G Pit



Augmentation Plan Accounting Protocol June 2022

Accounting is an administrative tool to confirm water use is in accordance with a decree or other approval including that any required replacement is made to the stream system at the correct time, location, and amount. This guideline is subordinate to any decree language or Division Engineer specific accounting requirements. It describes basic augmentation plan accounting scenarios. Accounting for more complex scenarios can build on the fundamentals described herein.

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1. Background and definitions

A thorough description of augmentation plans for well pumping is available in the [Beginners Guide to Augmentation Plans for Wells](#). The following terms are used in this document:

- **Diversions** are withdrawals from a well, stream, or pond/reservoir.
- **Depletions** are the volume of reduced streamflow caused by a diversion. Lagged depletions are those that occur at a later time than when water is diverted by well pumping or groundwater pond evaporation due to the timing of water movement through the subsurface between the well/groundwater pond and the stream.
- **Hydrobase** is DWR's database of water information.
- **Colorado's Decision Support Systems ("CDSS")** is a State of Colorado website (<https://cdss.colorado.gov/>) providing access to water data and tools.
- **Replacement water** is a volume of water provided to the stream system to replace depletions and satisfy the unmet needs of senior water rights. Replacement water is typically provided from a reservoir release or another source that has been contracted for the purpose of replacing depletions. Replacement water may also be provided in the form of historic consumptive use ("HCU") credits derived from a change of water right where the use of a water right was changed to augmentation.
- **Transit loss** is the diminishment of the amount of water in a stream as water travels from upstream to the downstream location.
- **Priority Admin Number** indicates the seniority of a water right; equal to the number of days between a water right's priority date and the earliest decreed priority, December 31, 1849. For example, the Priority Admin Number for a water right with a priority date of May 5, 1950 is 36650.00000. The lower the Priority Admin Number, the more senior the water right. The five digits to the right of the period are used when the postponement doctrine applies to a water right due to a delay in decreeing the water right in the court (read more about this in the [Administrative Call Standard](#), Appendix A).
- **Administrative Call** is a term that indicates there are unfulfilled downstream water rights "calling" for curtailment of upstream junior water rights to fulfill their need. In accounting, when the downstream Administrative Call is from a senior water right (with a lower Priority Admin Number), diversions/depletions are out-of-priority and replacement water must be provided.
- **Balance** is the amount of replacement water minus the depletions and obligations, not considering the Administrative Call. The balance may be negative when the diversions resulting in the depletions are in priority.
- **Net Effect** is the amount of replacement water minus the depletions and obligations, considering the Administrative Call. When the net effect is zero or positive, it shows that the Augmentation Plan prevented injury by replacing all out-of-priority diversions/depletions.

2. Methods to submit accounting

a. Accounting and Reporting Uploader (preferred)

The preferred method to submit accounting is through the use of the [CDSS Accounting and Reporting Uploader tool](#). To set up an online account, call or email the Division contacts for the appropriate Water Division as shown in Table 1. Additional information is available on DWR's website under Data and Information/Online Data Submittal.

b. Email

Submit via email to the Water Commissioner and the Division Accounting email shown in Table 1. File names for accounting sheets should include the 7 digit Augmentation Plan WDID assigned by the Division Engineer's office.

3. Timing of accounting submittal

Accounting must be submitted as specified by your decree, DWR administrative approval (SWSP, Replacement Plan, etc.), or as requested by the Division Engineer or designated representative(s). If timing is not specified, submit accounting with the timing shown in Table 1.¹

Table 1. Accounting Submittal Emails and Phone Number by Division

Division	Accounting Question & Submittal Email	Contact Phone Number	Standard Submittal Timing
1 - South Platte	Div1Accounting@state.co.us	970-352-8712	30 days after the end of the reporting month
2 - Arkansas	water.reporting@state.co.us	719-542-3368	10 days after the end of the reporting month*
3 - Rio Grande	kevin.boyle@state.co.us	719-589-6683	10 days after the end of the reporting month
4 - Gunnison	gregory.powers@state.co.us	970-249-6622	10 days after the end of the reporting month
5 - Colorado	dnr_div5acct@state.co.us	970-945-5665	10 days after the end of the reporting month
6 - Yampa/White	brian.romig@state.co.us	970-846-0036	Annually by November 15 or as needed upon request
7 - San Juan/ Dolores	dnr_div7acct@state.co.us	970-247-1845	10 days after the end of the reporting month**
Designated Ground Water Basins	chris.grimes@state.co.us	303-866-3851 ext. 8253	Annually by February 15 for the prior year

*for approvals deemed critical for administration; all others (including simple subdivisions) bi-annual readings before and after the irrigation season

**for approvals deemed critical for administration; annual submittals for others

¹ For proper administration, Water Commissioners may request regular and direct submission of water data in addition to accounting submittals described herein.

4. Overall organization of accounting spreadsheet and required information per tab

a. Overall organization

The following are typical spreadsheet tab names in accounting. See the [example and screenshots section](#) for an overview of what this might look like:

- i. Contact/Plan Information tab
- ii. Input tab(s)
- iii. Depletions & Obligations tab
- iv. Replacement tab
- v. Summary tab
- vi. DWR tab
- vii. DWR Meters tab
- viii. Version/Notes tab

Fewer or additional tabs as necessary for more simple or complex accounting, subject to approval by the Division Engineer

b. Contact/Plan Information Tab

The accounting must provide the contact information including name and email address for:

- i. The party(s) responsible for submitting the accounting
- ii. The plan administrator and/or the plan attorney
- iii. Water court case number (format of YYCWXXXX), SWSP name and 4-digit Plan ID, or Ground Water Commission Order represented in the accounting.
- iv. The 7-digit overall WDID(s) associated with the augmentation plan (not the individual structure WDIDs).²

c. Input Tab(s)

When possible, all cells showing diversion of water (well pumping and stream diversions) should be located on one or multiple input tabs as shown below. Cells with regular input, such as meter readings and reservoir releases, should be shaded a specifically identified color to distinguish them from cells that use formulas to convert or summarize the input.

Depending on the specific operation, the following may be included on Input tabs:

i. Estimated water use or evaporation:

When meters or measurement structures are not required, water consumption is estimated based on counts (number of homes, number of domestic animals, acreage of pond surface area, etc.) multiplied by a factor. Include a column or row for each of the following that are relevant to the augmentation plan:

1. Type of use: single family dwellings, domestic animals, area of lawn and garden (include units - square feet or acres), area of pond evaporation (include units - square feet or acres), etc.
2. Count or area input value for each type: the number of homes or domestic animals or the area (square footage or acres of home lawn and garden irrigation or pond surface evaporation). [this is the “Input” that could change regularly]

² Colorado Decision Support System Tools (<https://dwr.state.co.us/Tools>) can be used to find WDIDs (see Structures), court case numbers (see Water Rights), and other supporting information.

3. Factor to convert input to consumption in acre-feet.
4. Acre-feet of consumption.

ii. Well diversion data using flow meters:

Enter raw readings or measurements (e.g., from totalizing flow meters) and how those raw readings or measurements are converted to volumes of water. There should be one row or column for each well with a meter as described below. Once the spreadsheet formulas have been established, generally only the meter reading is entered with every submittal. The well and meter information may be located in a separate well & meter information tab (see [example and screenshots section](#)).

1. Well WDID
2. Well Permit Number
3. Priority Admin Number
4. Flow Meter Serial Number
5. Reading Date
6. Reading³ [this is the “Input” that will change regularly]
Enter reading exactly as shown on the face of the meter as a non-negative integer.
7. Comment
 - a. When a meter rolls over (such as from 999 to 000), is replaced or reset⁴, add a comment stating the old meter serial number, the maximum number before the rollover or replacement and then enter the number on the face of the meter at the end of the reporting period. Update the meter information section with the new meter’s serial number.
8. Meter information:
 - a. Make
 - b. Model
 - c. The units represented by the digits on the meter (such as gallons or acre-feet)
 - d. Multiplier for meter reading (if applicable)
 - i. Residential well meters typically have a multiplier of 1.0 with units of gallons. Readings should generally report all numbers on the face of the meter (including non-rotating digits) with a multiplier of 1.0.
 - ii. Larger agricultural or commercial wells typically read in acre-feet and typically have a decimal multiplier. For instance, with a multiplier of 0.001, a meter reading of 123456 represents 123.456 acre-feet.
 - e. Correction factor
 - i. This is a multiplier used when a meter test shows a need to correct the installed meter to an accurate reading. This will be 1.0 when there is not a test showing a need for correction.
9. Acre-feet pumped
Use a formula to convert from the meter reading to acre-feet using the multiplier and correction factor. To convert meter readings in gallons to acre-feet, divide by 325,851.

iii. Well diversion data using Electricity Consumption

For wells approved to use power records and a Power Conversion Coefficient (PCC) to estimate water pumped, the accounting information is similar to well diversion data using flow meters (section 4.c.ii) above with the following replacements (instead of 6. “Reading” and 8. “Meter information”):

³ A comment on the Meter Reading cell is used to note “Actual, Estimated, Corrected, or Calculated” for all wells subject to measurement rules when the entry is not based on a reading taken on the actual date specified.

⁴ Resetting a meter may be prohibited by local well measurement rules.

6. Power meter reading [this is the “Input” that will change regularly]
8. Power Meter Information
 - a. PCC

iv. Surface diversion data

Include a column or row for each surface diversion with the following information:

1. Diversion structure name or a.k.a.
2. Structure WDID
3. Measured flow through the measurement structure and units
 - a. If more than one water right is diverted through the structure, there should be adjacent columns for each. Each source should have a designated column or row and labeling should include the measuring structure WDID and the source of the water (e.g. case number).
 - b. If there is a multiplier that adjusts the standard measurement-flow relationship to reflect the actual measurement-flow relationship of the specific structure (“shift”), the adjusted value should be reflected in a separate column.
4. Priority Admin Number
5. Storage and release

If the diversion is to storage, which will be followed by a release of water, follow the instructions in the [Reservoir Accounting Guideline](#).

v. Administrative Call (are diversions in-priority?)

In portions of Colorado, there may be times when depletions are in-priority, and do not require replacement. Depletions are in-priority when water rights on the stream system that are senior to the diversion have enough water and are not “calling” for more water.

1. Simplified (percent of month administrative call)

For certain basic accounting, such as subdivision well depletions, the Division Engineer may allow or apply an estimate of the days of expected administrative call each month. Typically, replacement water is provided based on projected call days, which is later compared to actual administrative call data to ensure that adequate replacement was provided. In this case, the accounting should have an input field either for the number of call days or the percentage of days in the month with a call.

2. Daily record of administrative call

Provide a column that shows whether depletions are either “IN” or “OUT” of priority each day.

- Locations with minimal call variation: In areas with minimal variation in the call, the Division Office may not require a formula comparing Priority Admin Numbers, but will accept manual entries of “IN” or “OUT” of priority each day.
- All other locations: “IN” or “OUT” of priority is determined daily using formulas comparing the Priority Admin Number of depletions to the Priority Admin Number of the calling water right in each depleted stream reach. Include a column for each of the following:
 - The Priority Admin Number of the calling water right. Calling structure information can be obtained programmatically from:
 - CDSS [REST](#) services - insert a link that pulls the required information directly from DWR’s database.
 - [CDSS Administrative Calls tool](#).

DWR accounting staff can provide guidance on incorporating this information within an accounting spreadsheet.

- The Name of the calling water right
- “In” or “Out”-of-priority either for all structures covered by the accounting or for each structure in its own column. Use a formula to compare the Priority Admin Number of the calling structure to the Priority Admin Number of the structure(s) in the accounting.

d. Depletion & Obligation tab

Used to (1) convert well pumping (and groundwater pond evaporation) to lagged depletions impacting the stream and (2) show lagged depletions that are out-of-priority, and (3) include any additional water obligations of the plan for augmentation.

- i. Calculate lagged depletions - Although well pumping and modeling may use a monthly step function to determine the depletions from pumping, the monthly result may, if requested by the Division Office or required by decree, then be divided by the number of days in the month in order to calculate a daily impact for daily water administration.
 1. Well Pumping (or groundwater pond evaporation) - Reference back to the Input tab for the acre-feet of water pumped or evaporated.
 2. Consumption factor (%) - If the decree or approval describes that a percentage of the water pumped is consumed and only the consumed amount is replaced.
 3. Acre-feet consumed - Multiply the acre-feet pumped by the consumption factor.
 4. Delay Factors - show factors that convert pumping in one month to depletions in future months. These may be percentages per month, that total 100 percent over an extended period of time.
 5. Depletions - a formula that combines previous months and present month pumping with the delay factors to determine depletions impacting the stream this month and in future months.
- ii. Out-of-priority depletions are combined into one column for each reach considering the administrative call information included on the Input tab.
- iii. Return flow obligations (if applicable): Replacement water sources changed from a historical irrigation use usually have a return flow obligation that must also be tracked in accounting. Return flow obligations are similar to depletions because they must be replaced in time, place, and amount. Depending on decree language and preference, return flow obligations may be included under the replacement tab in section 4.e. below. For each replacement source with return flow obligations, include the following:
 - the basis and volume of the return flow obligation,
 - the location of the return flow obligation,
 - replacement of the return flow obligation.

e. Replacement tab

List each structure providing replacement water, transit loss information, and volumes released:

- i. Structure providing replacement water: name of reservoir, ditch, well, leased or other replacement water, its WDID, and the water court decree allowing its use for augmentation or replacement. For instructions on accounting for replacement using recharge accretions, refer to specific recharge guidance.
- ii. Replacement water travel distance (miles)
the distance from the point of release to the location of the out-of-priority depletion where replacement is owed
- iii. Transit loss percent per mile (%)

- iv. Total transit loss (%)
- v. Volume released (acre-feet)
- vi. Transit loss volume (acre-feet)
- vii. Volume delivered (acre-feet) - equal to volume released minus transit loss volume
- viii. Return flow obligations (acre-feet): Depending on decree language as described above, these may be included here instead of in the depletion tab. See description under section 4.d. above.

f. Summary Tab

The Summary Tab is used to calculate the Net Effect of the Plan on each impacted stream reach. The summary should reference back to information and formulas in the other spreadsheet tabs. The summary tab compares obligations, replacements and that replacements equal or exceed obligations in time, place, and amount. The Summary tab should only summarize data and calculations located in other tabs of the accounting. It should not contain manual entries, input data, or make calculations that are used in other tabs.

The Summary Tab should contain the following for each impacted stream reach (typically on a daily basis or as required by the division office):

- i. Total depletions and obligations
- ii. Total replacement
- iii. Balance - Total replacement minus total depletions and obligations, which may be negative when the diversions resulting in the depletions are in priority.
- iv. Net Effect - Total replacement minus out-of-priority depletions and obligations. If the net effect is negative, the Plan resulted in injury.

g. DWR tab for Diversion Record Data Import

A tab titled “DWR” can be used to convert data input or numbers calculated in other tabs into rows that represent diversion record water classes, which DWR staff can upload to create official diversion records. When appropriate, DWR staff will develop this tab or work with plan owners to develop this tab, ensure it follows DWR’s standard format and utilizes water classes according to the [Diversion Records Standard](#). This format is necessary to allow the records to be imported directly into Hydrobase.

h. DWR Meters tab for Meter Reading Data Import

A tab titled “DWR Meters” can be included for use in bulk uploading meter readings. This calculates pumping totals in compliance with well rules or to meet other Division-specific requirements. In order for this tab to be bulk uploaded into Hydrobase, the columns in this tab must be formatted as shown in the “[User Guide - How to Bulk Upload Meter Readings](#)”.

i. Version/Notes tab

A tab to document changes in accounting formulas and the date of those changes.

5. Requirements and recommendations for all tabs

- a. Accounting should show how raw input data is manipulated using formulas to determine the resulting impact on the river. Accounting must therefore include a functional spreadsheet (ie no pdfs) showing all operations, formulas, etc. to clearly show calculations.
- b. The use of a water year of November 1 through October 31 is required unless specifically decreed otherwise. When a different water year is required by decree, DWR may request additional months of data in the accounting to include the November 1 through October 31

time period, resulting in more than 12 months of data being reported.

- c. For all tabs other than the Summary tab, include running accounting for the entire water year without monthly subtotals. Monthly subtotals commonly result in errors in the spreadsheet. The Summary tab can be used as a place to show monthly totals.
- d. Date fields should be complete dates (month, day, and year, recognized as a date value by the spreadsheet software) but may be formatted to display as desired.
- e. Use consistent cell color shading to clearly identify the different types of information, such as manual input cells and formula cells (provide a legend for data types, see example below)
- f. Enter “0” in cells to document no diversion or use, rather than blanks, hyphens, or another character.
- g. When a formula is overwritten with a manual entry, the cell should be highlighted and a comment added for the reasoning.
- h. When there are multiple stream reaches involved, organize accounting from upstream to downstream.
- i. Footnotes should be utilized, as necessary, to describe the basis for formulas, calculations imposed on the raw input data, and column descriptions.

6. Example, Screenshots, and Spreadsheet Templates

Water users may request spreadsheet templates from their local division office for use as examples of how accounting may be assembled, but are responsible for developing their own functional accounting customized for their own Plan requirements. Note that example and actual accounting may have slightly different organization than what is described above.

a. (List of relevant tabs)

	A	B	C	D	E	F	G	H	I
1									
2		Example Aug Plan							
3		Case No. 12CW3456							
4		Plan WDID: 0101234							
5									
6		Water Year							
7		2021							
8									
9									
10									
11									
12		Person responsible for Accounting:							
13		(Name of Contact)							
14		(Address)							
15		(Email)							
16		(Phone)							
17									
18		Aug Plan Contact:							
19		(Name of Contact)							
20		(Address)							
		Contact & Plan Info	Well & Meter Information	Depletions & Obligations	Replacements	Example Pond	Summary	DWR	Version

b. (Contact & Plan Information)

The accounting should be titled with the Aug Plan Name, Aug Plan Water Court Case No(s) and Plan WDID. Contact your local DWR office for help obtaining any of this information.

A color legend that includes any relevant cell shading and conditional formatting.

Example Aug Plan
Case No. 12CW3456
Plan WDID: 0101234

Water Year
2021

Cell Fill Color Legend
Yellow Indicates Input Cells
Orange Indicates Data Error
Red Indicates Operational Violation
Grey Indicates Cells Not In Use

Person responsible for Accounting:
(Name of Contact)
(Address)
(Email)
(Phone)

Aug Plan Contact:
(Name of Contact)
(Address)
(Email)
(Phone)

Plan Attorney Contact:
(Name of Contact)
(Address)
(Email)
(Phone)

This tab should also include the contact information for the Aug Plan. This may include the Plan Owner, Plan Operator, Person responsible for submitting the accounting and the Plan attorney.

Any other static information that may be helpful can be added to this tab. This may include Decreed rates or volumes, Appropriation/Adjudication dates, Administration numbers, schematics, etc.

Decreed Water Rights & Replacement Sources				
Case No.	Right Name	Adj Date	Appr Date	Admin No
12CW3456	Example Aug Plan		12/31/2012	59535.00000
12CW3456	Example Pond		8/10/2012	59392.00000
W1717	Well 1	12/31/1972	12/31/1940	33237.00000
W1717	Well 2	12/31/1972	7/26/1959	40018.00000

Contact & Plan Info Well & Meter Information Depletions & Obligations Replacements Example Pond Summary DWR Version

c. (Well & Meter Information)

	A	B	C	D	E	F	G	H	I
1	Example Aug Plan								
2	Well & Meter Information								
3	Water Year								
4	2021								
5									
6	Well Information								
7	Name	Well 1	Well 2						
8	WDID	0104567	0105678						
9	Permit No.	12345F	12346FR						
10	Owner	John Brown	Jane Smith						
11	Contact	123 Fake St. Springfield CO 80123	124 Fake St. Springfield CO 80123						
12	Meter Information								
13	Make	McCrometer	McCrometer						
14	Model	MO310	MO306						
15	Serial Number	9-8-RC263N	15-08090-6						
16	Correction Factor	0.931	1						
17	Multiplier	0.001	0.001						
18	Units	acre-feet	acre-feet						
19									
20									
21	* Owner and Contact info is not needed here if the wells are owned by the owner of the plan.								
22									
23									
24									
25									
26									
27									
28									
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98									
99									
100									

Meter and Well information should be kept current. This information is verified through field visits and meter testing.

If convenient, this information can be listed on the tab where meter readings are entered or separated as shown here.

Contact & Plan Info
Well & Meter Information
Depletions & Obligations
Replacements

d. (Depletions & Obligations) - in this example, the Depletions & Obligations tab includes cells for entering meter readings, calculating well pumping over the period, and converting that to lagged depletions.

	A	B	C	D	E	F	G	H	I	J
1		Example Aug Plan								
2		Depletions & Obligations								
3		Water Year								
4		2021								
5										
6		Meter Readings (EOM)								
7										
8		Month	Well 1	Reading	Well 2	Reading				
9			0104567	Type	0105678	Type				
10			(af)		(af)					
11		10	124651	Actual	133356	Actual				
12		11	124653	Actual	133358	Actual				
13		12	124655	Calculated	133360	Calculated				
14		1	124657	Actual	133362	Actual				
15		2	124659	Actual	133364	Actual				
16		3	124661	Actual	133366	Actual				
17		4	124663	Actual	133368	Actual				
18		5		"		"				
19		6		"		"				
20		7		"		"				
		Contact & Plan Info		Well & Meter Information		Depletions & Obligations		Replacements		Example Pond

The Meter Reading section is a manual entry section of the Depletions and Obligations tab. This should be the actual meter reading as shown on the face of the meter. Adjacent tables or columns/rows may be added to calculate multipliers, correction factors, or conversions.

e. (Depletions & Obligations)

	A	B	C	D	E	F	G	H	I	J	K	L
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23		10		"		"						
		Contact & Plan Info		Well & Meter Information		Depletions & Obligations		Replacements		Example Pond	Summary	DWR

The Well Pumping section calculates the value of the amount of pumping determined by the difference in the monthly (or the frequency as required) reading by the subsequent monthly reading and then factoring in values for multipliers, correction factors and/or conversions.

Well Pumping				
Multiplier	0.001	0.001		
Correction Factor	0.931	1		
	Well 1	Well 2		
Month	0104567	0105678		
	(af)	(af)		
11	0.00186	0.00200		
12	0.00186	0.00200		
1	0.00186	0.00200		
2	0.00186	0.00200		
3	0.00186	0.00200		
4	0.00186	0.00200		
5				
6				
7				
8				
9				
10				

f. (Depletions & Obligations) - calculate lagged depletions for the month

5	E	F	G	H	I	J	K	L	M	N	O	P	Q	R		
6	EOM)		Well Pumping				URF			Lagged Depletions						
7			Multiplier	0.001	0.001											
8	Well 2	Reading Type	Correction Factor	0.931	1		Previous Year Pumping			10.00	10.00					
9	0105678				Well 1	Well 2				Well 1	Well 2					
10	(af)		Month	0104567	(af)	0105678	Month			0104567	0105678		Month	0104567	0105678	
11	133356	Actual											(af)			
12	133358	Actual			11	0.00186	0.00200	11			0.0887	0.0887		11	0.88700	0.75300
13	133360	Calculated			12	0.00186	0.00200	12			0.0660	0.0660		12	0.66000	0.50500
14	133362	Actual			1	0.00186	0.00200	1			0.0396	0.0396		1	0.62300	0.39600
15	133364	Actual			2	0.00186	0.00200	2			0.0334	0.0334		2	0.58500	0.33400
16	133366	Actual			3	0.00186	0.00200	3			0.0294	0.0294		3	0.58500	0.29400
17	133368	Actual			4	0.00186	0.00200	4			0.0340	0.0340		4	0.62300	0.34000
18		"			5			5			0.0698	0.0628		5	0.69800	0.62800
19		"			6			6			0.0811	0.1070		6	0.81100	1.07000
20		"			7			7			0.1132	0.1478		7	1.13200	1.47800
21		"			8			8			0.1302	0.1635		8	1.30200	1.63500
22		"			9			9			0.1075	0.1454		9	1.07500	1.45400
23		"			10			10			0.1019	0.1113		10	1.01900	1.11300
Contact & Plan Info Well & Meter Information Replacements Example Pond Summary DWR Version (+)																

Lagged Depletions should be calculated utilizing the Well Pumping data and the lagging method established by the relevant decree or SWSP (Stream depletion Factors or Glover Parameters).

g. (Depletions & Obligations) - convert monthly lagged depletions to daily

DATE	Lagged Depletions					Return Flow Obligations		
	Well 1	Well 2	Well 1 Out-of-Priority	Well 2 Out-of-Priority	Total Out-of-Priority	Subsurface RFO		
	0104567 (cfs)	0104567 (cfs)	0105678 (cfs)	0105678 (cfs)	(cfs)	(cfs)	(cfs)	(cfs)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
11/1/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/2/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/3/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/4/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/5/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/6/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/7/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/8/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/9/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/10/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/11/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/12/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03

Lagged Depletions can now be prorated into a daily value to determine the daily depletion to the river from the Aug Plan.

h. (Replacements)

	A	B	C	D	E	F	G	H	I	J	K
1	Example Aug Plan										
2	Replacements										
3	Water Year										
4	2021										
5											
6	DATE	Previous Year's Total	Example Aug Station			Pond Release			Total		
7		131									
8		Diversion of Changed Shares	Total Through Structure	Transit Loss	Credit at Reach	Release For Aug	Transit Loss	Credit at Reach	Total Aug Credits		
9			0102345			0103456					
10		(cfs) (1)	(cfs) (2)	(cfs) (3)	(cfs) (4)	(cfs) (5)	(cfs) (6)	(cfs) (7)	(cfs) (8)		
11											
162	3/31/2021					0.00	0.00	0.000	0.000		
163	4/1/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
164	4/2/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
165	4/3/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
166	4/4/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
167	4/5/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
168	4/6/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
169	4/7/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
	Contact & Phone		Well & Meter Information			Depletions & Obligations			Replacements	Exam	

Input information should be shaded differently than the calculated (cells with formulas) cells. Please provide a legend with the color/shading scheme.

i. (Summary) - daily

Example Aug Plan Summary Water Year 2021											
DATE	Call (admin no.) (1)	Is Plan In Priority? (y/n) (2)	Depletions & Obligations				Replacements			Balance (cfs) (10)	Net Effect (cfs) (11)
			Lagged Depletions	OOP Lagged Depletions	RFOs	Total	Aug Station	Pond Release	Total Credits		
			(cfs) (3)	(cfs) (4)	(cfs) (5)	(cfs) (6)	0102345 (cfs) (7)	0103456 (cfs) (8)	(cfs) (9)		
11/15/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.05	0.05	-0.01	-0.01
11/16/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.06	0.06	0.00	0.00
11/17/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.06	0.06	0.00	0.00
11/18/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.06	0.06	0.00	0.00
11/19/2020	99999.00000	y	0.03	0.00	0.03	0.03	0.00	0.06	0.06	0.00	0.06
11/20/2020	99999.00000	y	0.03	0.00	0.03	0.03	0.00	0.06	0.06	0.00	0.06
11/21/2020	99999.00000	y	0.03	0.00	0.03	0.03	0.00	0.05	0.05	-0.01	0.05
11/22/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.05	0.05	-0.01	-0.01

The Balance column is the balance of Replacements and actual Depletions/Obligations regardless of whether the plan is in or out of priority. It is calculated by subtracting Depletions and Obligations from Replacements.

j. (Summary) - a monthly summary table may be added at the bottom of the Summary tab below the daily summary

Monthly Summary											
Month	Number of days Plan is In Priority (# of days) (1)	% of Days In Priority (%) (2)	Lagged Depletions (ac-ft) (3)	OOP Lagged Depletions (ac-ft) (4)	RFOs (ac-ft) (5)	Total (ac-ft) (6)	Aug Station (ac-ft) (7)	Res Release (ac-ft) (8)	Total (ac-ft) (9)	Balance (ac-ft) (10)	Net Effect (ac-ft) (11)
Nov-20	0.00	0%	1.77	1.77	1.81	3.58	0.00	4.26	4.26	0.68	0.68
Dec-20	0.00	0%	1.32	1.32	1.41	2.73	0.00	4.32	4.32	1.59	1.59
Jan-21	30.00	97%	1.25	0.04	1.15	1.19	0.00	0.77	0.77	-1.63	0.69
Feb-21	28.00	100%	1.17	0.00	0.89	0.89	0.00	0.00	0.00	-2.06	0.00
Mar-21	31.00	100%	1.17	0.00	0.88	0.88	0.00	0.00	0.00	-2.05	0.00
Apr-21	9.00	30%	1.25	0.04	0.84	0.88	3.83	0.00	3.83	1.75	2.38
May-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Effect is the Balance or Net Impact value with the priority of the plan included. Plans considered in priority may not be required to replace depletions. This column represents whether the Aug plan shows injury to the river or has sufficiently replaced its uses.